The Economics of **Beekeeping** in Alberta 1991

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THE ECONOMICS OF BEEKEEPING

IN ALBERTA

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FOREWORD

Beekeeping is an important enterprise in Alberta Agriculture's diversification strategy. It contributed almost $13.5 million to the agricultural economy in 1991. The Production Economics Branch monitors beekeeping returns and costs to keep producers, policy makers and the industry up-to-date on the economic performance of apiaries across the province. Results of these surveys are used in a variety of policy and program initiatives. Equally important, study participants as well as producers are encouraged to compare the performance of their beekeeping operation with the related group average for their area to help improve the economic performance of their beekeeping business.

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SECTION I

INTRODUCTION

The Production Economics Branch (PEB) has been monitoring the costs and returns of livestock and crop production in the province in an extensive way since the 1960's. These studies have been viewed as an important tool for assisting producers in their cropping decisions and the federal and provincial governments in developing policies and programs for the different farm enterprises. Where information gaps existed in other provinces, results from these studies have served as the basis to fill those gaps.

The PEB has been monitoring production costs and returns for the beekeeping (honey production) sector of the agriculture industry since the early 1970's. The 1991 Costs and Returns Study is a continuing effort to monitor honey production in the province. The information presented in the following pages will be used for a variety of reasons including tripartite program negotiations. It would also assist the individual study participants to compare their costs and returns with the group averages to develop/manage their operations better.

OBJECTIVES OF THE STUDY

Following are the objectives of this study:

1. To determine production costs and returns associated with beekeeping, in Alberta.
2. To establish physical input/output relationships for beekeeping in Alberta.
3. To provide each study participant with a detailed analysis of his/her beekeeping operation and an opportunity to compare the operation with the group average.
4. To document how variation in size of operation affects net returns.
5. To observe regional differences in costs and returns for beekeeping.
6. To provide an up-to-date economic report on beekeeping to assist governments in developing programs and policies for this industry.

THE STUDY SAMPLE

A total of 30 beekeepers were randomly selected to obtain production costs and returns data for the 1991 production year. Of this sample, only 20 apiarists were surveyed because of time and financial constraints. The results presented in the study are based on 20 beekeepers across the province. Regional breakdown of the sample is:

Group	Region	Number of Participants	Average Number of Hives
I	Southern (1) South–Central (2) North–Central (3) North–East (4)	5	822
II	North–West (5)	11	947
III	Peace River (6)	4	718
	TOTAL	20	

The study sample was further divided into the following three groups by size of operation.

Group	Size of Operation	Number of Participants	Average Number of Hives
IV	Up to 600 Hives	8	406
V	601 to 1,000 Hives	7	826
VI	Over 1,000 Hives	5	1,757
	TOTAL	20	

Number of hives included in the study sample was 17,400 for the 1991 honey production year, about 12 per cent of the total number of hives in the province. The largest honey producer operated 2,500 hives and the smallest about 200 hives.

SECTION II

METHOD OF ANALYSIS

The raw data obtained from study participants was reviewed for information gaps before entering into the computer for analysis. Individual analyses provincial and group averages (by region and size of operation) were completed using the Paradox 3.5 program.

HONEY PRODUCTION IN ALBERTA

Honey production in Alberta has widely fluctuated during the last six decades. The number of beekeepers in the province has ranged from a low of 830 in 1991 to 2,000 in 1975. Over the last decade, the number of apiarists has steadily declined from 1800 in 1980 to about 830 in 1991, a decrease of about 54 per cent. The number of colonies during the last two decades has also fluctuated considerably; i.e. ranging from 110,000 in 1970 to 193,000 in 1987. A historical summary of the number of beekeepers, colonies, colonies per apiary, production per colony and price of honey received by producers in Alberta is presented in Table 1.

COMPUTATION OF COSTS AND RETURNS

Costs and returns data presented in this report were weighted by the number of hives. For various group analyses (regions and by size of operation) costs were calculated on a per hive and per pound basis by dividing the sum of all expenses by the number of hives in that particular group. In a few cases certain costs were not incurred in an individual operation, therefore, cost per unit for different inputs was averaged to determine the cost per hive and per pound of honey produced.

A. Total Value of Honey:

Total value of honey is based on:

- Bulk honey sales;
- bulk honey inventory;
- consumer pack sales;
- consumer pack inventory; and
- other honey sales.

TABLE 1: HISTORICAL DATA ON HONEY PRODUCTION IN ALBERTA, 1970 – 1991

Year	Number Of Beekeepers	Number of Colonies	Colonies Per Apiary	Production Per Colony (lbs.)	Price Per Pound (¢)
1970	1,200	110,000	92	194	14.0
1971	1,200	115,000	96	196	20.0
1972	1,200	130,000	108	154	31.0
1973	1,300	145,000	112	150	46.0
1974	1,800	156,000	87	149	46.0
1975	2,000	158,000	79	128	39.9
1976	2,000	160,000	80	88	37.2
1977	1,800	165,000	92	130	43.1
1978	1,800	160,000	89	125	50.8
1979	1,700	150,000	88	150	57.2
1980	1,800	160,000	89	141	58.1
1981	1,700	170,000	100	116	64.4
1982	1,650	174,000	105	105	62.2
1983	1,610	172,000	107	145	59.9
1984	1,600	180,000	112	154	48.5
1985	1,700	170,000	100	108	56.3
1986	1,700	190,000	112	126	59.9
1987	1,480	193,000	130	132	41.7
1988	1,140	150,000	132	154	39.9
1989	855	143,500	168	119	49.0
1990	840	152,000	181	154	58.1
1991	830	147,000	177	143	57.8

Source: Agriculture Statistics Yearbook, Statistics Branch, Alberta Agriculture 1971 to 1991, Edmonton, Alberta

B. Total Value of Production:

In addition to total value of honey (A), total value of production also includes:

- Wax sales;
- Pollen sales;
- Crop insurance receipts;
- Miscellaneous income (any program payments); and
- Less honey purchase of resale.

The study participants were asked to provide actual sales and an estimate of expected price for any honey held in inventory and/or any other stock.

C. Cash Costs:

Most of the inputs used in honey production were purchased during the production year and recorded as such in the year-end statement. The study participants were asked to provide estimates for those costs for which actual records were not available, i.e., an inventory carried from last year. In 1991, the average hourly wage for hired labour was $7.62 per hour. Operating interest was the actual amount paid by the study participants.

D. Total Variable Cost:

Total variable cost is based on total cash costs (C above) and operator and family labour. Operator's and family labour were valued at $7.50 and $5.00 per hour, respectively. The study participants were asked to provide estimates of hours spent on the honey operation by their family and themselves.

E. Total Capital Cost:

Capital costs included depreciation on buildings, bee equipment, and vehicles, etc. Capital interest was the actual amount paid by the study participants for capital purchases.

F. Total Production Cost:

Total production cost comprises of cash costs (C), operator and family labour (D), and total capital cost (E).

G. Management Indicators:

Management indicators presented at the bottom of various tables show return to value of honey (total value of honey less cash costs), gross margin (total value of production less cash costs) return to investment and equity. These indicators exhibit profit margins and economic viability of honey production in Alberta and by regions and size of operation.

SECTION III

HONEY PRODUCTION COSTS AND RETURNS IN ALBERTA

The results presented in Table 2 are based on data provided by 20 beekeepers across the province. In 1991, honey produced for sale by an average study participant was 132,753 pounds, of which 119,670 pounds were sold as bulk honey. Consumer pack sales and other honey sales were 2,519 and 360 pounds, respectively. Honey held in inventory amounted to 10,205 pounds during the 1991 honey production year. Average yield per hive was 153 pounds for the 870 hives in production. Details on honey, wax and pollen sales and other income are given in Table 2.

Total value of honey (bulk sales, inventory, consumer pack sales and other honey sales) amounted to $77,392 per average honey producer with 870 hives or $89 per hive ($0.58 per pound). When wax/pollen/other sales; crop insurance receipts, miscellaneous income were included to total value of honey, then total value of production increased to $79,515 or $91 per hive ($0.60 per pound of honey produced).

Cash Costs:

Cash costs include all out-of-pocket costs which amounted to $50,179 per average study participants in 1991. In terms of cash costs per hive, the average amount was $58 per hive ($0.38 per pound). Because of the producers' interest in knowing their cash costs for each basic unit of production, these costs were broken into as much detail as possible. The most significant inputs which make up major portions of cash costs are hired labour, feed-sugar, and machine fuel and repairs.

The study participants were asked to estimate time spent by their family members and themselves in regards to the honey operation. The time spent by the operator was valued at $7.50 per hour and $5.00 per hour for a family member(s). When operator and family labour charges were added to cash costs, the total variable cost amounted to $70,432 per average study participant and $81 per hive, or $0.53 per pound of honey produced.

Capital Costs:

Capital costs are comprised of depreciation for buildings, bee equipment, vehicles and capital interest paid. Average total capital cost amounted to $16,061, or $18 per hive ($0.12 per pound) per study participant.

TABLE 2:

HONEY PRODUCTION COSTS AND RETURNS
ALBERTA
1991

NUMBER OF HIVES		870.10	
AVERAGE YIELD PER HIVE (LBS)		152.57	
HONEY PRODUCED (LBS)		132753.05	
	TOTAL	PER HIVE	PER POUND PRODUCED
		$	
BULK HONEY SALES 119669.60 lbs.	69392.49	79.75	.52
BULK HONEY INVENTORY 9576.50 lbs.	5440.77	6.25	.04
COMSUMER PACK SALES 2518.65 lbs.	1767.74	2.03	
COMSUMER PACK INVEN. 628.75 lbs.	489.89	.56	
OTHER HONEY SALES 359.55 lbs.	301.27	.35	
A. TOTAL VALUE OF HONEY	**77392.15**	**88.95**	**.58**
WAX/POLLEN/OTHER SALES 1541.16 lbs.	1788.95	2.06	
CROP INSURANCE RECEIPTS	835.20	.96	.01
MISCELLANEOUS INCOME	1027.95	1.18	
less HONEY PURCHASE FOR RESALE (-)	1528.90	1.76	
B. TOTAL VALUE OF PRODUCTION	**79515.34**	**91.39**	**.60**
CASH COSTS:			
Bee Purchase - (Package Bees)	3042.20	3.50	
Bee Purchase - (Queens)	1292.64	1.49	
Freight	117.41	.13	
Feed - Sugar 45032.33 lbs.	6619.01	7.61	
Medicine/Icing Sugar	446.50	.51	
Cyanogas/Bee Repellent	374.61	.43	
Bldg./Equip. Repair & Maint.	4102.68	4.72	
Bldg./Equip. Insurance	1277.63	1.47	
Heating Fuel	593.18	.68	
Utilities	1700.58	1.95	
Machinery Fuel/Repairs	6228.85	7.16	
Vehicle Insurance/Registration	754.66	.87	
Other Insurance - Product	1310.57	1.51	
- Crop	877.90	1.01	
Property and Business Tax	244.80	.28	
Labels/Tags/Containers	983.04	1.13	
Small Tools/H'ware/Off. Supplies	2343.51	2.69	
Promotion/Mktg./Assoc. Fees	715.75	.82	
Accounting/Legal	739.00	.85	
Forage Access	803.79	.92	
Custom Work/Leases	652.36	.75	
Hired Labour 1674.95 hours	12608.51	14.49	
Miscellaneous Expense	1528.19	1.76	
Operating Interest Paid	821.58	.94	
C. TOTAL CASH COST	**50178.91**	**57.67**	**.38**
Plus:			
Operator Labour 2292.50 hours	17193.75	19.76	
Family Labour 611.80 hours	3059.00	3.52	
D. TOTAL VARIABLE COST	**70431.66**	**80.95**	**.53**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	12495.57	14.36	
Capital Interest Paid	3565.70	4.10	
E. TOTAL CAPITAL COST	**16061.26**	**18.46**	**.12**
F. TOTAL PRODUCTION COST	**86492.92**	**99.41**	**.65**
G. MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**27213.24**	**31.28**	**.20**
GROSS MARGIN (B-C)	**29336.43**	**33.72**	**.22**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**-3411.88**	**-3.92**	
RETURN TO EQUITY (B-F)	**-6977.58**	**-8.02**	

Total Production Cost:

Average total production cost was estimated at $86,493 for a honey operation with 870 hives. Average production cost per hive or per pound of honey produced was $99 or $0.65, respectively. Details on total production costs for an average study participant are presented in Table 2.

Management Indicators:

When total cash costs were deducted from total value of honey, the average study participant showed a positive return of $27,213 or $31 per hive ($0.20 per pound of honey produced). Similarly, when total cash costs were deducted from total value of production, average honey operation showed a return of $29,336 per study participant or $34 per hive ($0.22 per pound). Average return to investment and equity was negative by $4 and $8 per hive, respectively.

Investment Costs:

Investment costs were divided into four categories, namely land, buildings, bee equipment, and machinery (includes vehicles). The study participants were asked to provide market value of land, buildings, bee equipment, and machinery to estimate total investment and depreciation for an average beekeeping operation. Actual interest paid on capital was used to arrive at total capital cost which also includes depreciation for buildings, bee equipment, and vehicles.

For the study sample, land associated with the beekeeping operation was about thirteen acres, valued at $6,959 or $546 per acre. Building investment for a 870 beehive operation was $63,131 or $73 per hive. Honey equipment investment for the study sample (20 participants) was estimated at $115,646 per average operation or $133 per hive. Machinery (automotives) investment was based on the percentage use of vehicles for the honey operation. This investment was estimated at $14,177 or $16 per hive in 1991. When all of the investment items were added together, the total investment amounted to $199,912 per average beekeeping operation or $230 per hive. Details on land, buildings, bee equipment and machinery investment are presented in Table 3.

HONEY PRODUCTION COSTS AND RETURNS BY REGIONS

The study sample was divided into three groups by regions, i.e. Southern, South–Central, North–Central and North–Eastern (Group I); North–West (Group II); and Peace River (Group III). The Southern, South–Central and North–Central regions had only three study participants. These were combined with the two from the North–Eastern region, thus bringing the total number to five

TABLE 3:

APIARY ENTERPRISE INVESTMENT
ALBERTA
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE
LAND	12.75 acres	6958.75	8.00
BUILDINGS		63131.39	72.56
BEE EQUIPMENT		115645.66	132.91
MACHINERY		14176.68	16.29
TOTAL INVESTMENT		199912.48	229.76
TOTAL EQUITY	70.11 %	140161.66	161.09

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	6958.75	---	---
SUB-TOTAL	6958.75	---	---
Building #1	39225.00	11.46	1961.25
Building #2	5329.71	10.17	266.49
Building #3	1610.45	19.63	80.52
Building #4	2281.58	13.51	114.08
Building #5 - House (25%)	14684.65	14.24	734.23
SUB-TOTAL	63131.39		3156.57
Hives	68309.95	12.66	3415.50
Pallets	1992.63	6.62	229.15
Fork Lift	3706.35	13.13	315.04
Hive Feeders	3753.75	5.62	750.75
Super Elevator	356.13	8.20	17.81
Uncapping Machines	3978.65	8.67	198.93
Honey Extractor	4183.93	11.22	209.20
Dryer/Heat Exchanger	607.00	4.73	30.35
Wax Spinner/Separator	1796.45	9.75	89.82
Pump & Motor	876.55	8.46	100.80
Honey Tank & Pipe	1247.13	11.44	62.36
Feed Tank	718.29	7.55	35.91
Storage Vessel	441.13	9.67	22.06
Boiler Furnace	951.25	8.89	47.56
Water System	1310.93	5.60	65.55
Compressor	383.00	6.52	19.15
Pressure Washer	337.68	3.08	38.83
Fuel Tank	595.25	13.50	29.76
Blower	434.43	5.33	21.72
Scales	590.45	11.60	29.52
Barrels	1036.00	4.42	51.80
Barrel Loader	269.60	7.37	13.48
Carts	385.70	11.98	19.29
Fencers/Shockers	514.80	8.86	25.74
Shop Tools	3907.80	13.79	449.40
Staplers	301.73	7.76	15.09
Office Equipment	1464.25	5.22	73.21
Lawn Mower	1666.50	6.20	191.65
Over-Wintering Insulation	4324.45	7.86	864.89
Miscellaneous Equipment	5203.95	44.81	274.37
SUB-TOTAL	115645.66		7708.68
Truck #1	5163.53	12.14	593.81
Truck #2	2496.03	13.56	287.04
Truck #3	3668.73	11.52	421.90
Truck #4	2848.40	9.22	327.57
SUB-TOTAL	14176.68		1630.32
TOTAL INVESTMENT	**199912.48**		**12495.57**

honey producers for Group I. Group II represents producers from the North–Western region. The number of honey producers surveyed in this region, or Group II, was eleven. The sample size for Group III or Peace River region was four.

Group I (Southern, South–Central, North–Central and North–East Regions):

The results presented in Table 4 are based on the averages for five study participants. Average size of the beekeeping operation was 822 hives. Yield per hive for this group was 137 pounds, thus producing over 112,800 pounds of marketable honey. Total value of production including insurance receipts and miscellaneous income was $65,548 per average beekeeper or $82 per hive ($0.60 per pound).

Average total cash costs for this group amounted to $63 per hive or $0.46 per pound of honey produced. When operator and family labour, and capital costs were added to cash costs, the average total production cost for the five beekeepers was $82,481 and $100 per hive or $0.73 per pound of honey produced.

Details on total value of production, cash costs, total variable cost, capital costs and total production cost for Group I participants are given in Table 4. Average total investment for land, buildings, bee equipment, and machinery for this group of honey producers is presented in Table 5. Average total investment for honey producers in this group amounted to $150,800 per operation or $183 per hive during the 1991 honey production year.

Group II (North–West Region):

Information presented in Table 6 is based on the averages of eleven study participants. On an average, the number of hives for this group was 947 with average yield being 170 pounds per hive. Total amount of honey produced by the participants in this group was 161,198 pounds.

Average total value of production for this group was $101 per hive or $0.59 per pound of honey produced. Cash costs for Group II amounted to $51 per hive or $0.30 per pound. When all costs (operator, family labour and capital costs) were added together, the average total production cost was $91 per hive or $0.53 per pound of honey produced. This group of participants showed higher return over cash costs compared to the other two groups. Details on costs and returns for Group II study participants are shown in Table 6.

TABLE 4:

HONEY PRODUCTION COSTS AND RETURNS
SOUTHERN, SOUTH CENTRAL, NORTH CENTRAL & NORTH-EAST REGIONS
1991

NUMBER OF HIVES		822.20	
AVERAGE YIELD PER HIVE (LBS)		137.24	
HONEY PRODUCED (LBS)		112842.60	
	TOTAL	PER HIVE $	PER POUND PRODUCED
BULK HONEY SALES 111520.00 lbs.	64681.60	78.67	.57
BULK HONEY INVENTORY 554.60 lbs.	321.67	.39	.00
COMSUMER PACK SALES 628.00 lbs.	446.40	.54	
COMSUMER PACK INVEN. 140.00 lbs.	98.00	.12	
OTHER HONEY SALES 0.00 lbs.	0.00	0.00	
A. TOTAL VALUE OF HONEY	**65547.67**	**79.72**	**.58**
WAX/POLLEN/OTHER SALES 1093.98 lbs.	1116.04	1.36	
CROP INSURANCE RECEIPTS	58.80	.07	.00
MISCELLANEOUS INCOME	771.80	.94	
less HONEY PURCHASE FOR RESALE (-)	0.00	0.00	
B. TOTAL VALUE OF PRODUCTION	**67494.30**	**82.09**	**.60**
CASH COSTS:			
Bee Purchase - (Package Bees)	1963.20	2.39	
Bee Purchase - (Queens)	1115.96	1.36	
Freight	306.34	.37	
Feed - Sugar 33634.80 lbs.	8740.73	10.63	
Medicine/Icing Sugar	135.18	.16	
Cyanogas/Bee Repellent	45.12	.05	
Bldg./Equip. Repair & Maint.	2102.66	2.56	
Bldg./Equip. Insurance	1029.70	1.25	
Heating Fuel	963.95	1.17	
Utilities	1898.42	2.31	
Machinery Fuel/Repairs	6592.34	8.02	
Vehicle Insurance/Registration	574.00	.70	
Other Insurance - Product	1320.46	1.61	
- Crop	900.00	1.09	
Property and Business Tax	125.67	.15	
Labels/Tags/Containers	1271.53	1.55	
Small Tools/H'ware/Off. Supplies	2683.99	3.26	
Promotion/Mktg./Assoc. Fees	512.57	.62	
Accounting/Legal	880.64	1.07	
Forage Access	1393.60	1.69	
Custom Work/Leases	105.24	.13	
Hired Labour 2189.40 hours	15777.80	19.19	
Miscellaneous Expense	1549.73	1.88	
Operating Interest Paid	170.00	.21	
C. TOTAL CASH COST	**52158.84**	**63.44**	**.46**
Plus:			
Operator Labour 2242.00 hours	16815.00	20.45	
Family Labour 563.20 hours	2816.00	3.42	
D. TOTAL VARIABLE COST	**71789.84**	**87.31**	**.64**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	8748.90	10.64	
Capital Interest Paid	1942.00	2.36	
E. TOTAL CAPITAL COST	**10690.90**	**13.00**	**.09**
F. TOTAL PRODUCTION COST	**82480.73**	**100.32**	**.73**
G. MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**13388.83**	**16.28**	**.12**
GROSS MARGIN (B-C)	**15335.47**	**18.65**	**.14**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**-13044.43**	**-15.87**	
RETURN TO EQUITY (B-F)	**-14986.43**	**-18.23**	

TABLE 5:

APIARY ENTERPRISE INVESTMENT
SOUTHERN, SOUTH CENTRAL, NORTH CENTRAL & NORTH-EAST REGIONS
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE $
LAND	9.22 acres	6452.00	7.85
BUILDINGS		73997.95	90.00
BEE EQUIPMENT		68350.00	83.13
MACHINERY		2000.00	2.43
TOTAL INVESTMENT		150799.95	183.41
TOTAL EQUITY	74.65 %	112566.65	136.91

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	6452.00	---	---
SUB-TOTAL	6452.00	---	---
Building #1	47940.00	8.81	2397.00
Building #2	2858.85	23.23	142.94
Building #3	2021.80	23.10	101.09
Building #4	6726.30	8.88	336.32
Building #5 - House (25%)	14451.00	11.62	722.55
SUB-TOTAL	73997.95		3699.90
Hives	35000.00	15.00	1750.00
Pallets	0.00	0.00	0.00
Fork Lift	0.00	0.00	0.00
Hive Feeders	6000.00	5.00	1200.00
Super Elevator	0.00	0.00	0.00
Uncapping Machines	1800.00	10.00	90.00
Honey Extractor	3000.00	10.00	150.00
Dryer/Heat Exchanger	2000.00	5.00	100.00
Wax Spinner/Separator	3500.00	15.00	175.00
Pump & Motor	3000.00	10.00	345.00
Honey Tank & Pipe	3000.00	10.00	150.00
Feed Tank	100.00	10.00	5.00
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	5000.00	10.00	250.00
Water System	1000.00	10.00	50.00
Compressor	0.00	0.00	0.00
Pressure Washer	0.00	0.00	0.00
Fuel Tank	400.00	10.00	20.00
Blower	0.00	0.00	0.00
Scales	1500.00	10.00	75.00
Barrels	300.00	10.00	15.00
Barrel Loader	0.00	0.00	0.00
Carts	500.00	10.00	25.00
Fencers/Shockers	0.00	0.00	0.00
Shop Tools	50.00	10.00	5.75
Staplers	50.00	10.00	2.50
Office Equipment	100.00	10.00	5.00
Lawn Mower	50.00	10.00	5.75
Over-Wintering Insulation	2000.00	3.00	400.00
Miscellaneous Equipment	0.00	0.00	0.00
SUB-TOTAL	68350.00		4819.00
Truck #1	2000.00	10.00	230.00
Truck #2	0.00	0.00	0.00
Truck #3	0.00	0.00	0.00
Truck #4	0.00	0.00	0.00
SUB-TOTAL	2000.00		230.00
TOTAL INVESTMENT	**150799.95**		**8748.90**

TABLE 6:

HONEY PRODUCTION COSTS AND RETURNS
NORTH WEST REGION
1991

NUMBER OF HIVES		947.27	
AVERAGE YIELD PER HIVE (LBS)		170.17	
HONEY PRODUCED (LBS)		161197.64	
	TOTAL	PER HIVE $	PER POUND PRODUCED
BULK HONEY SALES 141625.64 lbs.	82142.87	86.72	.51
BULK HONEY INVENTORY 15687.00 lbs.	8906.64	9.40	.06
COMSUMER PACK SALES 2999.00 lbs.	1951.59	2.06	
COMSUMER PACK INVEN. 418.18 lbs.	317.06	.33	
OTHER HONEY SALES 467.82 lbs.	467.82	.49	
A. TOTAL VALUE OF HONEY	**93785.98**	**99.01**	**.58**
WAX/POLLEN/OTHER SALES 1745.39 lbs.	1745.39	1.84	
CROP INSURANCE RECEIPTS	190.91	.20	.00
MISCELLANEOUS INCOME	790.91	.83	
less HONEY PURCHASE FOR RESALE (-)	1052.55	1.11	
B. TOTAL VALUE OF PRODUCTION	**95460.65**	**100.77**	**.59**
CASH COSTS:			
Bee Purchase - (Package Bees)	3570.73	3.77	
Bee Purchase - (Queens)	999.10	1.05	
Freight	60.86	.06	
Feed - Sugar 16699.14 lbs.	5142.86	5.43	
Medicine/Icing Sugar	497.09	.52	
Cyanogas/Bee Repellent	172.42	.18	
Bldg./Equip. Repair & Maint.	4904.66	5.18	
Bldg./Equip. Insurance	1377.27	1.45	
Heating Fuel	412.90	.44	
Utilities	1489.13	1.57	
Machinery Fuel/Repairs	6120.93	6.46	
Vehicle Insurance/Registration	764.37	.81	
Other Insurance - Product	1739.00	1.84	
- Crop	330.55	.35	
Property and Business Tax	356.97	.38	
Labels/Tags/Containers	965.28	1.02	
Small Tools/H'ware/Off. Supplies	2744.11	2.90	
Promotion/Mktg./Assoc. Fees	874.02	.92	
Accounting/Legal	710.34	.75	
Forage Access	627.07	.66	
Custom Work/Leases	458.72	.48	
Hired Labour 1468.00 hours	11366.66	12.00	
Miscellaneous Expense	1650.37	1.74	
Operating Interest Paid	709.05	.75	
C. TOTAL CASH COST	**48044.45**	**50.72**	**.30**
Plus:			
Operator Labour 2445.64 hours	18342.27	19.36	
Family Labour 579.09 hours	2895.45	3.06	
D. TOTAL VARIABLE COST	**69282.18**	**73.14**	**.43**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	13289.83	14.03	
Capital Interest Paid	3266.17	3.45	
E. TOTAL CAPITAL COST	**16556.00**	**17.48**	**.10**
F. TOTAL PRODUCTION COST	**85838.18**	**90.62**	**.53**
G. MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**45741.53**	**48.29**	**.28**
GROSS MARGIN (B-C)	**47416.20**	**50.06**	**.29**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**12888.64**	**13.61**	
RETURN TO EQUITY (B-F)	**9622.46**	**10.16**	

Average total investment for land, buildings, bee equipment, and machinery (vehicles) for Group II study participants (North–West Region) amounted to $211,698 per operation or $223 per hive. Details on investment for this group are presented in Table 7.

Group III (Peace River Region):

Four honey producers provided detailed information on their operations from the Peace River region. Group averages for these study participants resulted in 718 hives per honey producer with an average yield of 111 pounds per hive. Among the three groups, average yield per hive was the lowest reported in the Peace River region. Average total value of honey production for Group III participants was at $71 per hive or $0.64 per pound of honey produced.

Average total cash costs for the four honey producers in the Peace River region amounted to $74 per hive ($0.67 per pound). Total production cost (cash costs, operator and family labour and capital cost) was almost $122 per hive or $1.11 per pound of honey produced, the highest among the three groups by regions. Return over value of honey was negative by $8 per hive or $0.07 per pound of honey produced for this group of producers. Average gross margin (total value of production less cash costs) was also negative at $3 per hive or $0.03 per pound of honey produced. Returns over investment and equity was negative by $43 and $52 per hive, respectively. Details on value of production, cash costs, operator and family labour costs, capital costs and management indicators are shown in Table 8.

Investment for land, buildings, bee equipment, and machinery (vehicles) for the study participants in the Peace River Region are presented in Table 9. Investment per hive for an average beekeeping operation in this region (Group III) amounted to $213 in 1991.

TABLE 7:

APIARY ENTERPRISE INVESTMENT
NORTH WEST REGION
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE
LAND	17.09 acres	8883.18	9.38
BUILDINGS		67367.09	71.12
BEE EQUIPMENT		118082.23	124.65
MACHINERY		17366.00	18.33
TOTAL INVESTMENT		211698.50	223.48
TOTAL EQUITY	73.13 %	154812.70	163.43

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	8883.18	---	---
SUB-TOTAL	8883.18	---	---
Building #1	40527.27	12.26	2026.36
Building #2	7390.91	8.77	369.55
Building #3	1818.18	18.00	90.91
Building #4	909.09	31.00	45.45
Building #5 - House (25%)	16721.64	13.93	836.08
SUB-TOTAL	67367.09		3368.35
Hives	67285.73	11.68	3364.29
Pallets	1636.32	4.96	188.18
Fork Lift	3099.82	7.87	263.48
Hive Feeders	3807.27	5.06	761.45
Super Elevator	500.00	6.82	25.00
Uncapping Machines	5487.09	8.61	274.35
Honey Extractor	3896.91	12.86	194.85
Dryer/Heat Exchanger	727.27	2.00	36.36
Wax Spinner/Separator	1351.27	10.07	67.56
Pump & Motor	922.00	8.87	106.03
Honey Tank & Pipe	1113.73	12.11	55.69
Feed Tank	838.36	7.09	41.92
Storage Vessel	227.27	8.12	11.36
Boiler Furnace	945.45	7.60	47.27
Water System	1528.73	3.95	76.44
Compressor	391.82	5.95	19.59
Pressure Washer	409.09	1.58	47.05
Fuel Tank	557.27	12.30	27.86
Blower	482.00	4.51	24.10
Scales	576.73	13.79	28.84
Barrels	1140.91	4.63	57.05
Barrel Loader	190.64	7.53	9.53
Carts	423.09	11.42	21.15
Fencers/Shockers	396.00	3.92	19.80
Shop Tools	4480.64	15.35	515.27
Staplers	310.18	6.26	15.51
Office Equipment	1644.09	3.92	82.20
Lawn Mower	2245.27	5.75	258.21
Over-Wintering Insulation	4674.45	5.53	934.89
Miscellaneous Equipment	6792.82	41.00	349.10
SUB-TOTAL	118082.23		7924.38
Truck #1	5341.64	12.86	614.29
Truck #2	3446.18	13.39	396.31
Truck #3	5387.45	11.28	619.56
Truck #4	3190.73	8.18	366.93
SUB-TOTAL	17366.00		1997.09
TOTAL INVESTMENT	**211698.50**		**13289.83**

TABLE 8:

HONEY PRODUCTION COSTS AND RETURNS
PEACE RIVER REGION
1991

NUMBER OF HIVES		717.75		
AVERAGE YIELD PER HIVE (LBS)		110.65		
HONEY PRODUCED (LBS)		79418.50		
		TOTAL	PER HIVE $	PER POUND PRODUCED
BULK HONEY SALES	69477.50 lbs.	40217.56	56.03	.51
BULK HONEY INVENTORY	4050.00 lbs.	2308.50	3.22	.03
COMSUMER PACK SALES	3561.00 lbs.	2913.80	4.06	
COMSUMER PACK INVEN.	1818.75 lbs.	1455.00	2.03	
OTHER HONEY SALES	511.25 lbs.	219.84	.31	
A. TOTAL VALUE OF HONEY		**47114.70**	**65.64**	**.59**
WAX/POLLEN/OTHER SALES	1538.50 lbs.	2749.85	3.83	
CROP INSURANCE RECEIPTS		3577.50	4.98	.05
MISCELLANEOUS INCOME		2000.00	2.79	
less HONEY PURCHASE FOR RESALE (-)		4750.00	6.62	
B. TOTAL VALUE OF PRODUCTION		**50692.05**	**70.63**	**.64**
CASH COSTS:				
Bee Purchase - (Package Bees)		2937.50	4.09	
Bee Purchase - (Queens)		2320.75	3.23	
Freight		36.75	.05	
Feed - Sugar	137195.50 lbs.	8026.25	11.18	
Medicine/Icing Sugar		696.50	.97	
Cyanogas/Bee Repellent		1342.50	1.87	
Bldg./Equip. Repair & Maint.		3862.25	5.38	
Bldg./Equip. Insurance		1313.50	1.83	
Heating Fuel		625.50	.87	
Utilities		2034.75	2.83	
Machinery Fuel/Repairs		6071.25	8.46	
Vehicle Insurance/Registration		953.75	1.33	
Other Insurance - Product		120.00	.17	
- Crop		2355.50	3.28	
Property and Business Tax		85.25	.12	
Labels/Tags/Containers		671.25	.94	
Small Tools/H'ware/Off. Supplies		816.25	1.14	
Promotion/Mktg./Assoc. Fees		534.50	.74	
Accounting/Legal		640.75	.89	
Forage Access		552.50	.77	
Custom Work/Leases		1868.75	2.60	
Hired Labour	1601.00 hours	12062.00	16.81	
Miscellaneous Expense		1165.25	1.62	
Operating Interest Paid		1945.50	2.71	
C. TOTAL CASH COST		**53038.75**	**73.90**	**.67**
Plus:				
Operator Labour	1934.50 hours	14508.75	20.21	
Family Labour	762.50 hours	3812.50	5.31	
D. TOTAL VARIABLE COST		**71360.00**	**99.42**	**.90**
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		10036.16	13.98	
Capital Interest Paid		6419.00	8.94	
E. TOTAL CAPITAL COST		**16455.16**	**22.93**	**.21**
F. TOTAL PRODUCTION COST		**87815.16**	**122.35**	**1.11**
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		**-5924.06**	**-8.25**	**-.07**
GROSS MARGIN (B-C)		**-2346.70**	**-3.27**	**-.03**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		**-30704.11**	**-42.78**	
RETURN TO EQUITY (B-F)		**-37123.11**	**-51.72**	

TABLE 9:

APIARY ENTERPRISE INVESTMENT
PEACE RIVER REGION
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE $
LAND	5.25 acres	2300.00	3.20
BUILDINGS		37900.00	52.80
BEE EQUIPMENT		105152.50	146.50
MACHINERY		7400.00	10.31
TOTAL INVESTMENT		152752.50	212.82
TOTAL EQUITY	38.12 %	58226.00	81.12

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	2300.00	---	---
SUB-TOTAL	2300.00	---	---
Building #1	24750.00	14.24	1237.50
Building #2	2750.00	3.55	137.50
Building #3	525.00	18.43	26.25
Building #4	500.00	4.00	25.00
Building #5 - House (25%)	9375.00	20.80	468.75
SUB-TOTAL	37900.00		1895.00
Hives	62500.00	16.88	3125.00
Pallets	2631.25	7.32	302.59
Fork Lift	3625.00	18.69	308.13
Hive Feeders	3975.00	5.02	795.00
Super Elevator	75.00	15.00	3.75
Uncapping Machines	1425.00	10.61	71.25
Honey Extractor	2750.00	9.55	137.50
Dryer/Heat Exchanger	250.00	12.00	12.50
Wax Spinner/Separator	3375.00	7.93	168.75
Pump & Motor	587.50	4.77	67.56
Honey Tank & Pipe	1800.00	10.00	90.00
Feed Tank	375.00	6.00	18.75
Storage Vessel	500.00	2.00	25.00
Boiler Furnace	450.00	10.83	22.50
Water System	1575.00	7.94	78.75
Compressor	387.50	7.19	19.38
Pressure Washer	425.00	6.47	48.88
Fuel Tank	775.00	12.94	38.75
Blower	375.00	3.17	18.75
Scales	558.75	6.06	27.94
Barrels	1443.75	1.78	72.19
Barrel Loader	325.00	7.23	16.25
Carts	200.00	8.25	10.00
Fencers/Shockers	1250.00	9.20	62.50
Shop Tools	3125.00	9.20	359.38
Staplers	512.50	9.24	25.63
Office Equipment	1450.00	5.34	72.50
Lawn Mower	900.00	3.64	103.50
Over-Wintering Insulation	5406.25	13.47	1081.25
Miscellaneous Equipment	2125.00	6.00	106.25
SUB-TOTAL	105152.50		7290.16
Truck #1	3875.00	7.94	445.63
Truck #2	975.00	15.18	112.13
Truck #3	1350.00	15.72	155.25
Truck #4	1200.00	16.65	138.00
SUB-TOTAL	7400.00		851.00
TOTAL INVESTMENT	**152752.50**		**10036.16**

SECTION IV

HONEY PRODUCTION COSTS AND RETURNS BY SIZE OF OPERATION

The study sample of 20 apiarists was further divided into three groups by size of operation. The main objective of analysing the data by size of operation was to study the economies of scales, i.e., whether the size of operation had any effect on net returns and overall production costs. Following are the three groups by size of operation:

Group	Size of Operation	Number of Participants	Average Number of Hives
IV	Up to 600 Hives	8	406
V	601 to 1,000 Hives	7	826
VI	Over 1,000 Hives	5	1,757
	TOTAL	20	

Group IV (up to 600 hives):

Table 10 presents the results for study participants in Group IV, i.e., up to 600 hives. The number of hives per average study participant for this group was 406. Number of hives owned by this group of participants ranged from 200 to 600 hives. Average yield for the group was 149 pounds per hive. Total value of honey (bulk honey sales, bulk honey inventory, consumer pack sales, consumer pack inventory and other honey sales) amounted to $35,559 per operation ($87.49 per hive) or $0.59 per pound of honey produced. When receipts from wax/pollen, other sales, crop insurance and miscellaneous income were included to total value of honey, then the total value of production per average honey producer for this group increased to $36,125 or $101 per hive ($0.69 per pound of honey produced).

Cash Costs:

Average cash costs for the smallest group of honey producers; i.e., under 600 hives, are presented in Table 10. These costs amounted to $64 per hive and $0.43 per pound of honey produced in 1991.

Average operator and family labour charges for this group (IV) were $38 per hive or $0.26 per pound. When operator and family labour costs were added to cash costs, average total variable cost amounted to $102 per hive or $0.69 per pound of honey produced.

TABLE 10:

HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (UP TO 600 HIVES)
1991

NUMBER OF HIVES		406.44	
AVERAGE YIELD PER HIVE (LBS)		148.52	
HONEY PRODUCED (LBS)		60365.78	
	TOTAL	PER HIVE	PER POUND PRODUCED
		$	
BULK HONEY SALES 54963.89 lbs.	31843.77	78.35	.53
BULK HONEY INVENTORY 2198.33 lbs.	1257.03	3.09	.02
COMSUMER PACK SALES 1691.78 lbs.	1358.57	3.34	
COMSUMER PACK INVEN. 1284.56 lbs.	1001.83	2.46	
OTHER HONEY SALES 227.22 lbs.	97.71	.24	
A. TOTAL VALUE OF HONEY	**35558.91**	**87.49**	**.59**
WAX/POLLEN/OTHER SALES 1156.69 lbs.	1707.32	4.20	
CROP INSURANCE RECEIPTS	128.44	.32	.00
MISCELLANEOUS INCOME	16.89	.04	
less HONEY PURCHASE FOR RESALE (-)	1286.44	3.17	
B. TOTAL VALUE OF PRODUCTION	**36125.12**	**88.88**	**.60**
CASH COSTS:			
Bee Purchase - (Package Bees)	750.00	1.85	
Bee Purchase - (Queens)	997.26	2.45	
Freight	157.80	.39	
Feed - Sugar 17464.67 lbs.	4043.63	9.95	
Medicine/Icing Sugar	351.53	.86	
Cyanogas/Bee Repellent	92.80	.23	
Bldg./Equip. Repair & Maint.	1148.47	2.83	
Bldg./Equip. Insurance	854.83	2.10	
Heating Fuel	370.85	.91	
Utilities	932.91	2.30	
Machinery Fuel/Repairs	4835.29	11.90	
Vehicle Insurance/Registration	710.48	1.75	
Other Insurance - Product	528.81	1.30	
- Crop	501.78	1.23	
Property and Business Tax	287.89	.71	
Labels/Tags/Containers	510.36	1.26	
Small Tools/H'ware/Off. Supplies	1487.10	3.66	
Promotion/Mktg./Assoc. Fees	421.93	1.04	
Accounting/Legal	255.21	.63	
Forage Access	541.59	1.33	
Custom Work/Leases	616.06	1.52	
Hired Labour 606.89 hours	4109.82	10.11	
Miscellaneous Expense	735.71	1.81	
Operating Interest Paid	784.56	1.93	
C. TOTAL CASH COST	**26026.65**	**64.03**	**.43**
Plus:			
Operator Labour 1693.00 hours	12697.50	31.24	
Family Labour 533.11 hours	2665.56	6.56	
D. TOTAL VARIABLE COST	**41389.71**	**101.83**	**.69**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	9199.75	22.63	
Capital Interest Paid	4335.78	10.67	
E. TOTAL CAPITAL COST	**13535.53**	**33.30**	**.22**
F. TOTAL PRODUCTION COST	**54925.24**	**135.14**	**.91**
G. MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**9532.25**	**23.45**	**.16**
GROSS MARGIN (B-C)	**10098.47**	**24.85**	**.17**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**-14464.34**	**-35.59**	
RETURN TO EQUITY (B-F)	**-18800.11**	**-46.26**	

Capital Costs:

Depreciation for buildings, bee equipment and vehicles, and capital interest paid by the eight apiarists in Group IV amounted to $13,536 ($33 per hive) or $0.22 per pound per honey produced. Breakdown of capital costs is shown in Table 10.

Total Production Cost:

Average total production cost for the study participants in the up to 600 hives group was estimated at $54,925 for a honey operation with 406 hives. Production cost per hive and per pound of honey produced was the highest for this group (among the three groups by size of operation) of beekeepers at $135 and $0.91 respectively.

Management Indicators:

Average return to value of honey over cash costs for Group IV participants, (up to 600 hives) was $23 per hive or $0.16 per pound of honey produced. Gross margin for this group was at $25 per hive or $0.17 per pound of honey produced. Return to investment and equity were negative by $36 and $46 per hive, respectively. Details on cash costs, operator and family labour, and capital costs and management indicators are given in Table 10.

Investment Costs:

Average total investment for honey producers in the up to 600 hives group was $145,211 per operation or $357 per hive, the highest among the three groups by size of operation. Average equity for this group was about 68 per cent of the total investment. Table 11 presents details on land, buildings, bee equipment and machinery (vehicles) investment for Group IV in 1991.

Group V (601 to 1,000 hives):

Average number of hives for this group (7 beekeepers) was 826 hives, with an average production of 139 pounds per hive. Section A in Table 12 presents total value of honey (bulk honey sales, consumer pack sales, other honey sales, honey held in inventory, and other honey sales). Total value of production which includes total value of honey and wax/pollen/other sales, insurance receipts, miscellaneous income, and less honey purchased for resale amounted to $69,111 per average apiarist, and $84 per hive or $0.60 per pound of honey produced.

TABLE 11:

APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (UP TO 600 HIVES)
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE $
LAND	15.06 acres	5376.11	13.23
BUILDINGS		44337.75	109.09
BEE EQUIPMENT		81794.03	201.24
MACHINERY		13702.89	33.71
TOTAL INVESTMENT		145210.78	357.27
TOTAL EQUITY	68.05 %	98816.17	243.12

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	5376.11	---	---
SUB-TOTAL	5376.11	---	---
Building #1	31805.56	9.92	1590.28
Building #2	2954.92	4.67	147.75
Building #3	301.00	16.31	15.05
Building #4	449.28	5.52	22.46
Building #5 - House (25%)	8827.00	19.33	441.35
SUB-TOTAL	44337.75		2216.89
Hives	42892.78	13.17	2144.64
Pallets	2569.17	6.33	295.45
Fork Lift	1899.78	5.04	161.48
Hive Feeders	1952.78	6.85	390.56
Super Elevator	58.06	10.00	2.90
Uncapping Machines	1766.44	5.41	88.32
Honey Extractor	3439.28	15.06	171.96
Dryer/Heat Exchanger	21.11	7.00	1.06
Wax Spinner/Separator	2702.11	9.60	135.11
Pump & Motor	681.61	7.80	78.39
Honey Tank & Pipe	1298.61	11.81	64.93
Feed Tank	717.31	5.24	35.87
Storage Vessel	322.50	6.59	16.13
Boiler Furnace	750.00	5.25	37.50
Water System	1614.28	5.17	80.71
Compressor	230.00	5.64	11.50
Pressure Washer	32.00	3.00	3.68
Fuel Tank	408.89	13.00	20.44
Blower	384.00	5.77	19.20
Scales	194.89	43.80	9.74
Barrels	451.67	2.41	22.58
Barrel Loader	393.00	7.30	19.65
Carts	237.67	12.03	11.88
Fencers/Shockers	406.22	4.61	20.31
Shop Tools	3878.44	12.80	446.02
Staplers	105.22	9.08	5.26
Office Equipment	2051.11	5.67	102.56
Lawn Mower	1657.00	5.32	190.56
Over-Wintering Insulation	2564.89	7.35	512.98
Miscellaneous Equipment	6113.22	13.40	305.66
SUB-TOTAL	81794.03		5407.03
Truck #1	5117.56	11.79	588.52
Truck #2	2912.00	11.77	334.88
Truck #3	4462.44	10.21	513.18
Truck #4	1210.89	6.57	139.25
SUB-TOTAL	13702.89		1575.83
TOTAL INVESTMENT	**145210.78**		**9199.75**

Cash Costs:

Cash costs for this group (601 to 1,000 hives) of beekeepers were estimated at $63 per hive ($0.45 per pound) during the 1991 honey production year. Average operator and family labour charges were $22 per hive or $0.16 per pound of honey produced. When cash costs were combined with the operator and family labour costs, average total variable cost amounted to $85 per hive or $0.61 per pound of honey produced (Table 12).

Capital Costs:

Capital costs for Group V honey producers (601 to 1,000 hives group) were estimated at $19 per hive or $0.13 per pound of honey produced. Capital interest paid by this group was about $6 per hive during the 1991 production year.

Total Production Cost:

Average total production cost (cash costs, operator and family labour, and capital costs) for honey producers in the size group of 601 to 1,000 hives, was $85,499 per average beekeeping operation. In terms of per hive and per pound of honey produced, the average production cost for this group was $103 and $0.74, respectively.

Return over cash costs for Group V participants (601 to 1,000 hives) was $21 per hive or $0.15 per pound of honey produced. Returns to investment and equity were negative at $14 and $20 per hive or $0.10 and $0.14 per pound of honey produced, respectively. Details on total value of production, costs and returns are given in Table 12.

Investment Cost:

Average total investment for the study participants in Group V (601 to 1,000 hives) was $163,406 per operation or $198 per hive. Land area associated with the honey operation for this group was nine acres, valued at $6,067 or $674 per acre ($7.34 per hive). Market value for buildings was estimated at $59,833 per average honey production operation or $72 per hive in Group V (Table 13). Bee equipment investment for this group was arrived at $88,371 per operation or $107 per hive. Average investment for vehicles was $9,135 per operation or $11 per hive. Details on land, buildings, bee equipment, and machinery (vehicles) investment are presented in Table 13.

TABLE 12:

HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (601 - 1000 HIVES)
1991

NUMBER OF HIVES		826.33	
AVERAGE YIELD PER HIVE (LBS)		139.32	
HONEY PRODUCED (LBS)		115124.83	
	TOTAL	PER HIVE	PER POUND PRODUCED
		$	
BULK HONEY SALES 97666.17 lbs.	56646.38	68.55	.49
BULK HONEY INVENTORY 11040.83 lbs.	6403.68	7.75	.06
COMSUMER PACK SALES 5441.17 lbs.	3562.93	4.31	
COMSUMER PACK INVEN. 119.00 lbs.	95.20	.12	
OTHER HONEY SALES 857.67 lbs.	857.67	1.04	
A. TOTAL VALUE OF HONEY	**67565.86**	**81.77**	**.59**
WAX/POLLEN/OTHER SALES 815.50 lbs.	815.50	.99	
CROP INSURANCE RECEIPTS	2192.33	2.65	.02
MISCELLANEOUS INCOME	1704.17	2.06	
less HONEY PURCHASE FOR RESALE (-)	3166.67	3.83	
B. TOTAL VALUE OF PRODUCTION	**69111.19**	**83.64**	**.60**
CASH COSTS:			
Bee Purchase - (Package Bees)	4009.83	4.85	
Bee Purchase - (Queens)	1978.26	2.39	
Freight	154.67	.19	
Feed - Sugar 92766.93 lbs.	5908.92	7.15	
Medicine/Icing Sugar	439.02	.53	
Cyanogas/Bee Repellent	1044.50	1.26	
Bldg./Equip. Repair & Maint.	4384.73	5.31	
Bldg./Equip. Insurance	928.83	1.12	
Heating Fuel	1204.33	1.46	
Utilities	1506.05	1.82	
Machinery Fuel/Repairs	5391.55	6.52	
Vehicle Insurance/Registration	734.96	.89	
Other Insurance - Product	0.00	0.00	
- Crop	1073.67	1.30	
Property and Business Tax	42.50	.05	
Labels/Tags/Containers	617.75	.75	
Small Tools/H'ware/Off. Supplies	1715.55	2.08	
Promotion/Mktg./Assoc. Fees	850.95	1.03	
Accounting/Legal	808.50	.98	
Forage Access	689.42	.83	
Custom Work/Leases	1024.60	1.24	
Hired Labour 1890.50 hours	14830.82	17.95	
Miscellaneous Expense	2268.89	2.75	
Operating Interest Paid	548.25	.66	
C. TOTAL CASH COST	**52156.55**	**63.12**	**.45**
Plus:			
Operator Labour 2092.17 hours	15691.25	18.99	
Family Labour 467.67 hours	2338.33	2.83	
D. TOTAL VARIABLE COST	**70186.13**	**84.94**	**.61**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	10503.77	12.71	
Capital Interest Paid	4809.32	5.82	
E. TOTAL CAPITAL COST	**15313.09**	**18.53**	**.13**
F. TOTAL PRODUCTION COST	**85499.22**	**103.47**	**.74**
G. MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**15409.31**	**18.65**	**.13**
GROSS MARGIN (B-C)	**16954.65**	**20.52**	**.15**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**-11578.70**	**-14.01**	
RETURN TO EQUITY (B-F)	**-16388.02**	**-19.83**	

TABLE 13:

APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (601 - 1000 HIVES)
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE $
LAND	9.00 acres	6066.67	7.34
BUILDINGS		59833.33	72.41
BEE EQUIPMENT		88370.67	106.94
MACHINERY		9135.33	11.06
TOTAL INVESTMENT		163406.00	197.75
TOTAL EQUITY	42.04 %	68701.37	83.14

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	6066.67	---	---
SUB-TOTAL	6066.67	---	---
Building #1	38166.67	8.89	1908.33
Building #2	2500.00	22.00	125.00
Building #3	0.00	0.00	0.00
Building #4	0.00	0.00	0.00
Building #5 - House (25%)	19166.67	10.91	958.33
SUB-TOTAL	59833.33		2991.67
Hives	46027.33	13.63	2301.37
Pallets	1379.17	9.15	158.60
Fork Lift	2750.00	14.73	233.75
Hive Feeders	3750.00	5.31	750.00
Super Elevator	600.00	9.50	30.00
Uncapping Machines	2100.00	6.60	105.00
Honey Extractor	3566.67	10.05	178.33
Dryer/Heat Exchanger	500.00	7.33	25.00
Wax Spinner/Separator	1283.33	11.34	64.17
Pump & Motor	1000.00	8.56	115.00
Honey Tank & Pipe	1316.67	10.81	65.83
Feed Tank	350.00	4.43	17.50
Storage Vessel	416.67	4.60	20.83
Boiler Furnace	1233.33	9.86	61.67
Water System	1500.00	5.22	75.00
Compressor	500.00	6.23	25.00
Pressure Washer	350.00	5.62	40.25
Fuel Tank	675.00	11.04	33.75
Blower	400.00	4.96	20.00
Scales	750.00	7.47	37.50
Barrels	1266.67	4.85	63.33
Barrel Loader	166.67	6.20	8.33
Carts	383.33	9.17	19.17
Fencers/Shockers	650.00	9.54	32.50
Shop Tools	2375.00	9.33	273.13
Staplers	341.67	9.39	17.08
Office Equipment	1150.00	2.06	57.50
Lawn Mower	491.67	5.19	56.54
Over-Wintering Insulation	6604.17	10.27	1320.83
Miscellaneous Equipment	4493.33	26.15	254.57
SUB-TOTAL	88370.67		6461.54
Truck #1	1383.33	14.07	159.08
Truck #2	1333.33	17.08	153.33
Truck #3	3500.00	11.62	402.50
Truck #4	2918.67	14.20	335.65
SUB-TOTAL	9135.33		1050.56
TOTAL INVESTMENT	**163406.00**		**10503.77**

TABLE 14:

HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (OVER 1000 HIVES)
1991

NUMBER OF HIVES		1757.20	
AVERAGE YIELD PER HIVE (LBS)		161.74	
HONEY PRODUCED (LBS)		284204.00	
	TOTAL	PER HIVE $	PER POUND PRODUCED
BULK HONEY SALES 262544.00 lbs.	152275.52	86.66	.54
BULK HONEY INVENTORY 21100.00 lbs.	11816.00	6.72	.04
COMSUMER PACK SALES 500.00 lbs.	350.00	.20	
COMSUMER PACK INVEN. 60.00 lbs.	42.00	.02	
OTHER HONEY SALES 0.00 lbs.	0.00	0.00	
A.TOTAL VALUE OF HONEY	**164483.52**	**93.61**	**.58**
WAX/POLLEN/OTHER SALES 3104.00 lbs.	3104.00	1.77	
CROP INSURANCE RECEIPTS	478.80	.27	.00
MISCELLANEOUS INCOME	2036.40	1.16	
less HONEY PURCHASE FOR RESALE (-)	0.00	0.00	
B.TOTAL VALUE OF PRODUCTION	**170102.72**	**96.80**	**.60**
CASH COSTS:			
Bee Purchase - (Package Bees)	6007.00	3.42	
Bee Purchase - (Queens)	1001.60	.57	
Freight	0.00	0.00	
Feed - Sugar 37372.60 lbs.	12106.80	6.89	
Medicine/Icing Sugar	626.40	.36	
Cyanogas/Bee Repellent	78.00	.04	
Bldg./Equip. Repair & Maint.	9081.80	5.17	
Bldg./Equip. Insurance	2457.20	1.40	
Heating Fuel	260.00	.15	
Utilities	3315.80	1.89	
Machinery Fuel/Repairs	9742.00	5.54	
Vehicle Insurance/Registration	857.80	.49	
Other Insurance - Product	4290.40	2.44	
- Crop	1320.00	.75	
Property and Business Tax	410.00	.23	
Labels/Tags/Containers	2272.20	1.29	
Small Tools/H'ware/Off. Supplies	4638.60	2.64	
Promotion/Mktg./Assoc. Fees	1082.40	.62	
Accounting/Legal	1526.40	.87	
Forage Access	1413.00	.80	
Custom Work/Leases	271.00	.15	
Hired Labour 3338.80 hours	25239.40	14.36	
Miscellaneous Expense	2065.80	1.18	
Operating Interest Paid	1216.20	.69	
C.TOTAL CASH COST	**91279.80**	**51.95**	**.32**
Plus:			
Operator Labour 3612.00 hours	27090.00	15.42	
Family Labour 926.40 hours	4632.00	2.64	
D.TOTAL VARIABLE COST	**123001.80**	**70.00**	**.43**
CAPITAL COSTS:			
Depreciation - Buildings and Equipment	20818.20	11.85	
Capital Interest Paid	687.20	.39	
E.TOTAL CAPITAL COST	**21505.40**	**12.24**	**.08**
F.TOTAL PRODUCTION COST	**144507.20**	**82.24**	**.51**
G.MANAGEMENT INDICATORS:			
RETURN TO VALUE OF HONEY (A-C)	**73203.72**	**41.66**	**.26**
GROSS MARGIN (B-C)	**78822.92**	**44.86**	**.28**
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)	**26282.72**	**14.96**	
RETURN TO EQUITY (B-F)	**25595.52**	**14.57**	

TABLE 15:

APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (OVER 1000 HIVES)
1991

INVESTMENT ITEMS:

		TOTAL $	PER HIVE
LAND	13.10 acres	10878.00	6.19
BUILDINGS		100917.60	57.43
BEE EQUIPMENT		209308.60	119.11
MACHINERY		21079.10	12.00
TOTAL INVESTMENT		342183.30	194.73
TOTAL EQUITY	87.77 %	300335.90	170.92

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE ($)	AGE (YEARS)	DEPRECIATION ($)
Land	10878.00	---	---
SUB-TOTAL	10878.00	---	---
Building #1	53850.00	15.27	2692.50
Building #2	13000.00	9.69	650.00
Building #3	5900.00	19.93	295.00
Building #4	8317.60	14.29	415.88
Building #5 - House (25%)	19850.00	14.02	992.50
SUB-TOTAL	100917.60		5045.88
Hives	140800.00	12.01	7040.00
Pallets	1691.00	4.96	194.47
Fork Lift	8105.80	15.89	688.99
Hive Feeders	7000.00	5.21	1400.00
Super Elevator	600.00	6.33	30.00
Uncapping Machines	10215.00	10.19	510.75
Honey Extractor	6265.00	8.22	313.25
Dryer/Heat Exchanger	1790.00	3.80	89.50
Wax Spinner/Separator	782.00	7.62	39.10
Pump & Motor	1079.30	9.09	124.12
Honey Tank & Pipe	1071.00	11.57	53.55
Feed Tank	1162.00	11.24	58.10
Storage Vessel	684.00	16.00	34.20
Boiler Furnace	975.00	12.44	48.75
Water System	538.00	9.17	26.90
Compressor	518.00	7.55	25.90
Pressure Washer	873.10	1.87	100.41
Fuel Tank	835.00	16.33	41.75
Blower	566.50	5.12	28.33
Scales	1111.00	4.78	55.55
Barrels	1811.00	4.96	90.55
Barrel Loader	171.00	9.00	8.55
Carts	655.00	13.92	32.75
Fencers/Shockers	548.00	13.58	27.40
Shop Tools	5800.00	17.17	667.00
Staplers	607.50	6.24	30.38
Office Equipment	785.00	8.68	39.25
Lawn Mower	3093.40	7.24	355.74
Over-Wintering Insulation	4756.00	4.35	951.20
Miscellaneous Equipment	4420.00	36.22	241.80
SUB-TOTAL	209308.60		13348.23
Truck #1	9782.50	12.14	1124.99
Truck #2	3142.50	14.76	361.39
Truck #3	2442.50	15.64	280.89
Truck #4	5711.60	6.67	656.83
SUB-TOTAL	21079.10		2424.10
TOTAL INVESTMENT	**342183.30**		**20818.20**

Group VI (over 1,000 hives):

Almost all of the honey produced by this group was sold as bulk honey. About seven per cent of the honey produced by these producers was held in inventory and sold in consumer packs. Total value of production for Group VI participants was $164,484 or $94 per hive. Average value per pound of honey produced was $0.58 for this group. When receipts from wax/pollen/other sales, crop insurance and miscellaneous sales were included with value of honey, total value of production increased to $170,103 or $97 per hive ($0.60 per pound). Details on honey sales and other income are presented in Table 14.

Cash Costs:

Cash costs for the largest group of honey producers were estimated at $52 per hive or $0.32 per pound of honey produced. The most significant cash cost items for this group were hired labour, followed by sugar for feeding the bees, and machine fuel and repairs.

Operator and family labour amounted to $18 per hive for this group. When operator and family labour costs were added to cash costs, the variable cost per average apiarist in this group amounted to $70 per hive or $0.43 per pound of honey produced.

Capital Costs:

Capital costs (depreciation for buildings, bee equipment, vehicles and capital interest paid) for Group VI participants (over 1,000 hives) were calculated to be $21,505 per operation or $12 per hive ($0.08 per pound of honey produced). This group of participants had the lowest capital interest paid among the three groups analyzed by the size of beekeeping operation.

Total Production Cost:

Average total production cost for the largest group of honey producers (Group VI – over 1,000 hives) amounted to $82 per hive for a 1,757 hive operation. In terms of per pound of honey produced, the cost was $0.51 in 1991. Cash costs for an average honey operation in this group were about 63 per cent of the total production costs. Operator and family labour made up to 22 per cent of the total production costs and the balance (15%) were the capital costs.

Return over cash costs based on total value of production was $45 per hive for the Group VI participants or $0.28 per pound of honey produced. Return to investment and equity were also positive by $15 per hive. Details on cash costs, operator and family labour, capital costs and management indicators are presented in Table 14.

Investment Cost:

Investment and investment costs for the group of producers in the over 1,000 hives category are shown in Table 18. Land area associated with the beekeeping operations was about 13 acres, valued at $10,878 or $830 per acre. Investment in land per hive was $6.00. Average buildings investment amounted to $57 per hive, whereas investment in bee equipment was $119 per hive. Investment in vehicles was $21,079 per operation or $12 per hive. Total investment for Group VI participants amounted to $342,183 or $195 per hive. This group of honey producers has the highest equity at 88 per cent. Details on all investment items are presented in Table 15.

SECTION V

SUMMARY

This section provides a summary of value of honey sold and total value of production, cash costs, operator and family labour, capital costs and management indicators for the study sample in Table 16. A gist of similar information is also presented for the various groups by region and size of operation in this Table.

Average yield per hive for the study sample was 153 pounds for the 1991 production year. It ranged from 111 pounds in the Peace River region to 170 pounds in the North–West region. When yield per hive was compared among the groups by size of operation, it ranged from 139 pounds for the 601 to 1,000 hives group, to over 162 pounds for the over 1,000 hives group (Table 16).

Average total value of production (bulk honey sales, other honey sales and miscellaneous income) was $91 per hive or $0.60 per pound of honey produced for the study sample. It ranged from $71 per hive in the Peace River regions to $101 per hive in the North–West region. By size of operation, average value of production ranged from $84 per hive for the 601 to 1,000 hives group to $97 per hive for the over 1,000 hives group.

Details on cash costs (input costs, feed–sugar and hired labour), operator and family labour, capital costs are presented in Table 16 for the study sample (Alberta), the regions and by size of operation. Average total production cost was estimated at $103 per hive for the study sample ($0.67 per pound of honey produced). These costs ranged from $91 per hive in the North–West regions to $122 per hive in the Peace River region. By the size of operation, total production costs ranged from $82 per hive ($0.52 per pound) for the over 1,000 hive group to $135 per hive ($0.91) for the up to 600 hives group, thus exhibiting economies of scale and investment.

Returns over cash costs were positive for all groups (by regions and size of operation). The only exception was the Peace River Region where the return over cash costs was negative. Average returns to equity and investment were negative except the producers in the North–West region and in over the 1,000 hives groups. These two groups showed positive returns at to investment and equity. Details on management indicators for the study sample and by regions and size of operation are presented in Table 16.

TABLE 16: A SUMMARY OF HONEY PRODUCTION COSTS AND RETURNS BY REGION AND SIZE OF OPERATION

	ALBERTA		By Region						By Size of Operation					
			SOUTHERN, SOUTH-CENTRAL, NORTH-CENTRAL AND NORTH-EAST		NORTH-WEST		PEACE RIVER		UP TO 600 HIVES		601 TO 1,000 HIVES		OVER 1,000 HIVES	
	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced
Average Yield/Hive (lbs.)	152.57		137.24		170.17		110.65		148.52		139.52		161.74	
Bulk Honey Sales ($)	79.75	.52	78.67	0.57	86.72	0.51	56.03	0.51	78.35	0.53	68.55	0.49	86.66	0.54
Other Honey Sales*	9.19	0.06	1.05	0.01	12.28	0.07	9.61	0.08	9.14	0.06	13.12	0.10	6.95	0.04
Miscellaneous Income	5.96	0.02	2.37	0.02	5.98	0.01	4.99	0.05	1.39	0.01	1.87	0.01	3.19	0.02
Total Value of Production ($)	91.39	0.60	82.09	0.60	100.77	0.59	70.63	0.64	88.88	0.60	83.64	0.60	96.80	0.60
CASH COSTS Input Costs ($)	35.57	0.23	35.62	0.24	33.29	0.20	45.91	0.41	43.97	0.30	38.02	0.27	30.69	0.19
Feed – Sugar	7.61	0.05	10.65	0.08	5.43	0.03	11.18	0.10	9.95	0.06	7.15	0.05	6.89	0.04
Hired Labour	14.49	0.09	19.19	0.14	12.00	0.07	16.81	0.15	10.11	0.07	17.95	0.13	14.36	0.09
A. Total Cash Costs ($)	57.67	0.38	65.44	0.46	50.72	0.30	73.90	0.67	64.03	0.43	63.12	0.45	51.95	0.32
B. Operator & Family Labour	23.28	0.15	23.87	0.17	22.42	0.13	25.52	0.23	37.80	0.26	21.82	0.16	18.06	0.11
C. Capital Costs	18.46	0.12	13.00	0.10	17.48	0.10	22.93	0.21	33.30	0.22	18.53	0.13	12.24	0.08
TOTAL PRODUCTION COSTS (A + B + C) ($)	99.41	0.65	100.32	0.73	90.62	0.53	122.35	1.11	135.14	0.91	103.47	0.74	82.24	0.51
RETURN OVER CASH COSTS ($)	30.21	0.20	18.65	0.14	50.06	0.29	(3.27)	(0.03)	24.85	0.17	20.52	0.15	44.86	0.28
RETURN TO INVESTMENT ($)	(5.92)	(0.02)	(15.87)	(0.12)	13.61	0.08	(42.78)	(0.39)	(35.59)	(0.24)	(14.01)	(0.10)	14.96	0.09
RETURN TO EQUITY ($)	(8.02)	(0.05)	(18.23)	(0.15)	10.16	0.06	(51.72)	(0.46)	(46.26)	(0.31)	(19.83)	(0.14)	14.57	0.09
AV. INVESTMENT PER HIVE ($)	229.76	1.51	183.41	1.34	223.48	1.31	212.82	1.92	357.27	2.41	197.75	1.42	194.73	1.20

* Includes bulk and other honey inventory